

Roadrace

FEATURES

- Two game selections—one and two player games
- T.V. raster generator
- All timing signals for color or black and white application
- Direct compatibility with Economy "8600" game console
- Automatic on-screen scoring
- Score color-keyed for each player
- Skill selection for difficult or easy driving conditions
- Realistic motor and crash sound generation with a minimum of external components

DESCRIPTION

The AY-3-8603/8603-1 game circuit has been designed to provide a realistic roadrace game using a standard television receiver. The circuit is intended for color or black and white usage with a 525 (AY-3-8603-1) or 625 (AY-3-8603) line receiver. The circuit is designed to be either a stand-alone game or an add-on for the Gemini Economy "8600" game series.

OPERATION

The AY-3-8603/8603-1 utilizes two potentiometers to produce control voltages for the horizontal positioning of the race cars. Each player controls his own car. The circuit displays a score for each driver, processes the game logic and produces composite sync, color burst location and blanking signals for a 525 or 625 line T.V. receiver. Sound outputs are also included to produce simulated engine and crash sounds with a minimum of external components. The AY-3-8603/8603-1 are designed to be operated with the AY-3-8615 color circuit.

ELECTRICAL CHARACTERISTICS

Maximum Ratings*

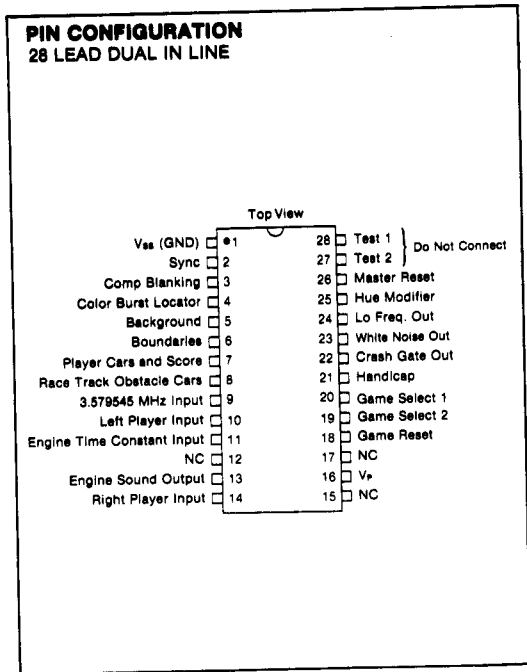
Voltage on any pin with respect to V_{SS}	-0.3 to +12V
Storage temperature range	-20°C to +70°C
Ambient operating temperature range	0°C to 40°C
Operating voltage supply range	+7.5 to +9V

* Exceeding these ratings could cause permanent damage. Functional operation of this device at these conditions is not implied—operating ranges are specified below.

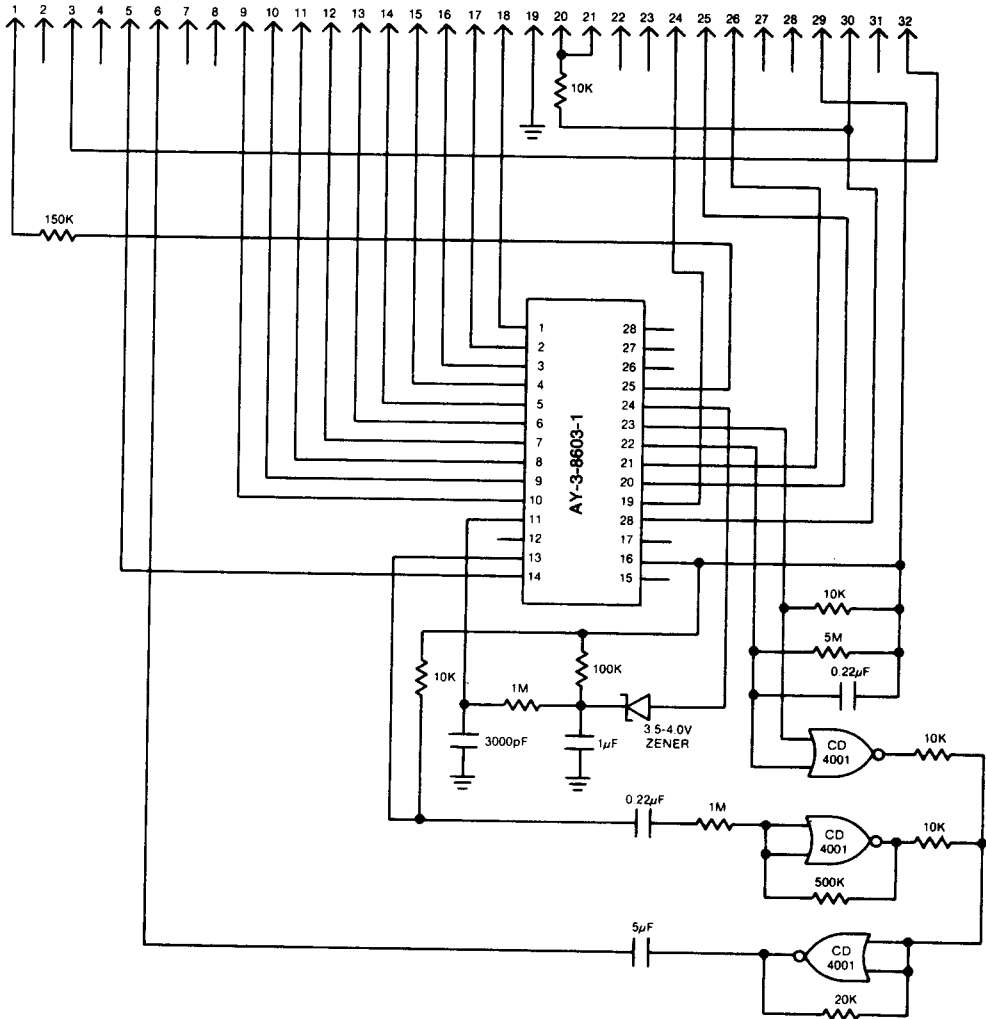
Standard Conditions (unless otherwise stated)

Parameter values at $T_a = 25^\circ\text{C}$

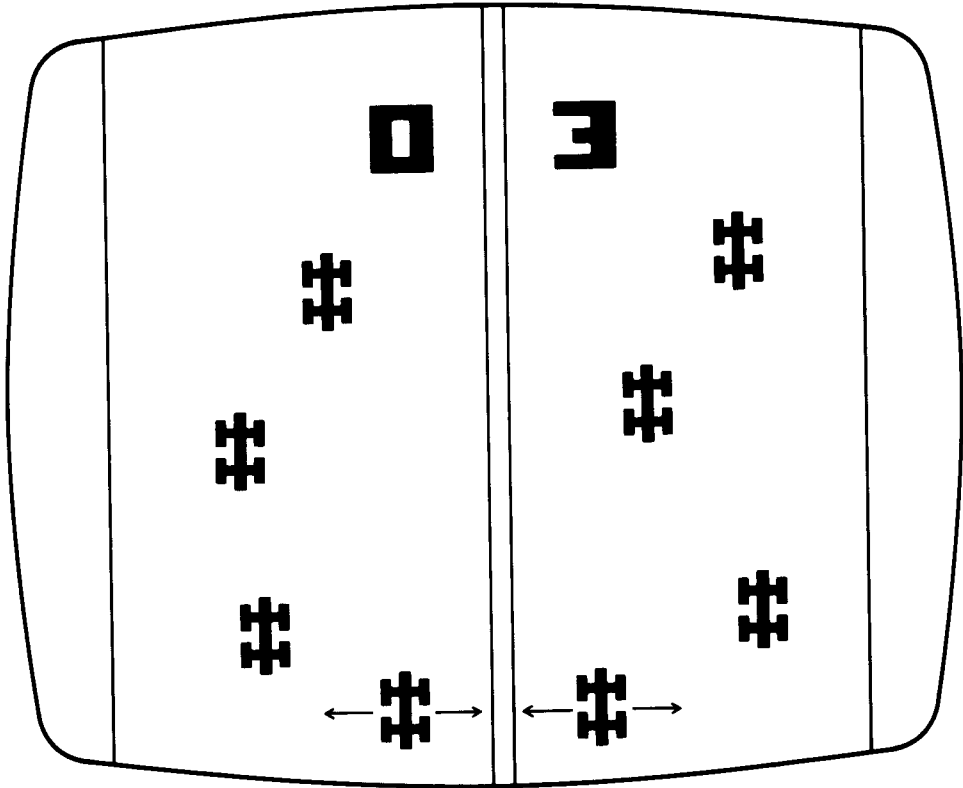
Characteristic	Min	Typ	Max	Units	Conditions
Clock Input					
Frequency	—	3.579545	—	MHz	45-55% duty cycle
Logic '0'	0	—	0.5	V	
Logic '1'	V_{P-2}	—	V_P	V	
Leakage	—	—	—	—	
Control Input					
Logic '0'	0	—	0.2	V	Max. contact resistance of 1K to V_{SS}
Logic '1'	V_{P-2}	—	V_P	V	
Input Impedance	—	100	—	Kohms	Pull up to V_P
Output pins					
On Off	—	1000	—	μA	$I_{out} = 2\text{mA}$ $V_{out} = V_P$
Power Supply Current					at $V_P = 7.5\text{V}$
	—	—	60	mA	



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CONSUMER



Roadrace (2 player)/ Qualify (1 player)

A typical T.V. screen display for the game is shown above. One driver for each car located at the bottom of each track controls his horizontal position only. After the game is reset the game starts as the picture produced simulates a race track in motion where each driver must maneuver his car around the other cars on the track. Both tracks have the same random obstacle car pattern with two visible per track, the pattern on the right is 24 lines ahead of the left pattern. This produces random cars on both tracks at one time with the same degree of difficulty for each driver. Video speeds increase every two seconds up to a maximum of seven speeds forward or until either player crashes his car into an obstacle car. Upon a crash, the video motion will stop and a crash sound will be generated. When the game restarts, the forward motion will start from slow and progress in speeds once again.

Simulated engine sound is produced during the game. The engine starts from low and increases in pitch at four second intervals during motion to simulate shift points during the game progress. Every crash scores one point for the opponent. Scores are shown over each track.

The one-player game selection removes the car image on the right track and left driver plays. A point is scored for the driver after passing every eight consecutive obstacle cars. Every crash gives the game, (right track) score one point. The first player or game to score 15 ends the game in either one or two player selection.